CAMBRIDGE
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OCR
Oxford Cambridge and RSA

Sample assessment material

LEVEL 3 ALTERNATIVE ACADEMIC QUALIFICATION
CAMBRIDGE ADVANCED NATIONAL IN

IT: DATA ANALYTICS

Certificate H019
Extended Certificate H119

For first teaching in 2025

F201: Big data and machine learning

Version 1.0 (June 2024)

Introduction

This is Sample Assessment Material (SAM) which has been produced for the OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate) and the OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Extended Certificate).

The SAM is an example exam paper that we publish alongside a new specification to help illustrate its intended style and structure when a qualification is first launched. We wanted to share the story of our assessment approach with you so when you look through the paper you will find we have pointed out certain features and explained the decisions we have made.

Resources to help support in teaching different areas of content can be found on the OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics webpage under 'Planning and teaching'.

Our exam papers are developed with accessibility in mind. The Understanding the assessment guide tells you a little more about the principles and rationale underpinning our approach for the qualifications. The 'Command Words' are in both the Understanding the Assessment guide and the specification. These tell you what we mean by each command word and how students should approach the question and understand its demand.

Appendix B of the specification: Command Words, gives detail about what is expected of each command word that will be included in exams and mark schemes. You can include teaching around the expectations of these as part of your teaching.

You said, we did

During the development of these qualifications, we talked extensively with teachers, subject experts, higher education institutions and our senior assessment teams to influence their structure, content and assessment materials. We then shared our final materials with teachers to make sure that they met their needs.

You told us that you wanted the exam to take similar approaches to the exam in the current Cambridge National in Information Technology qualification. We have tried to do this by using a familiar tone and style of questioning .

You told us to keep the exam as short as possible but retain time to allow students to read the scenario and respond to questions which require a creative answer. We have done this by reducing the number of available marks to 60 and setting the duration of the exam to 1 hour 15 minutes.

You told us that scenarios used within the exams should be accessible and easy for students to understand. We have done this by only using scenarios that will be familiar to students.

Examples of your comments are placed against the relevant sections/questions.

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All students will sit the exam at the same time on the same day.

The time allowed is designed to give students approximately one minute per mark plus reading time.

If students require additional answer space, lined paper may be available at the end of the answer booklet in a live question paper. Remember the question number(s) must be clearly shown.

OCR
Oxford Cambridge and RSA

<<Date>> – <<Morning/Afternoon>>

Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics

H119 Unit F201: Big data and machine learning

Sample Assessment Material (SAM)

Time allowed: 1 hour 30 minutes

CXXX/XXXX

No extra materials are needed.

Please write clearly in black ink. **Do not write in the barcodes.**

Centre number | | | | | | Candidate number | | | | |

First name(s) _____

Last name _____

Date of birth | D | D | M | M | Y | Y | Y | Y |

INSTRUCTIONS

- Use black ink.
- Write your answer to each question in the space provided. You can use extra paper if you need to, but you must clearly show your candidate number, the centre number and the question numbers.
- In the live exam there might be lined pages at the end of the question paper for you to use if you need extra space. Remember, you must clearly show the question numbers.
- Answer **all** the questions.

INFORMATION

- The total mark for this paper is **60**.
- The marks for each question are shown in brackets **[ ]**.
- This document has **16** pages.

ADVICE

- Read each question carefully before you start your answer.

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This unit is part of the Extended Certificate qualification. It is **not** included in the Certificate qualification.

This exam will always be set and marked by us. Exams will be available in January and June each year. Students can resit this unit and the best result will be used to calculate the certification result.

The exam will always have 60 marks. There are no sections in this exam.

This exam will have a range of question types. Question types include:

- Forced choice/controlled response questions – these are typically worth 1 to 4 marks
- Short answer, closed response questions – these are typically worth 1 to 2 marks
- Extended constructed response questions with points-based marks schemes – these are typically worth 3 to 4 marks
- Extended constructed response questions with levels of response marks schemes – these will be worth either 6 or 9 marks

These allow us to assess the following Performance Objectives:

- PO1 – Show knowledge and understanding
- PO2 – Apply knowledge and understanding
- PO3 – Analyse and evaluate knowledge, understanding and performance.

The questions will sample content from across the Topic Areas.

A large retailer has an online store and 250 physical stores across the UK. There are currently over 12 million members of its loyalty scheme. Customers use an online form on the retailer's website to register to join the loyalty scheme. Each customer can only join once. After registration, customers are emailed a membership number. Customers can use the membership number when shopping online or in store.

1

(a) State the **characteristic** of big data that relates to the completion of an online form.

.....

[1]

(b) State **two** ways the volume of data can characterise data as big data.

1.....

.....

2.....

.....

[2]

Where context is given, this will be kept as short as possible and will only include information needed for the questions.

The number of marks for a question will always be given at the end of the question and will always be right aligned.

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3

Here are some of the customer loyalty scheme records.

Membership number	Given name	Family name	Email address	Postcode
124XC78	Mia	Ling	ML.asl.com	L90 67BD
987YT99	Jane	Taylor	Jane@BBt.com	
390BB41	Kareem	Riley	247@ihl.com	NP01 79V
622MB83	Jamal	Amit	Ja27@btm.com	LX99
124XC78	Mia	Ling	ML.asl.com	L90 67BD

Data cleaning and data wrangling will be carried out on the customer loyalty scheme records.

(c) Identify **three data cleaning** techniques that need to be carried out on the customer loyalty scheme records above.

1.....

2.....

3 .....

[3]

There is one mark awarded for each correctly identified item of information.

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Turn over

When we ask a **complete the sentence** question, we may give a list of words in alphabetical order for students to choose from. The words to choose from from will in bold.

Students should complete the sentences by writing their chosen words in the spaces provided.

(d) Complete the sentences to explain what **data wrangling** is.

Use words from the list.

You can use each word once, more than once or not at all.

analysed **formatted** **processed** **raw** **reliable** **verified**

Data wrangling transforms and prepares …….. data from one or more sources into a format that can be ……..…. or used by a computer system or application. It can be time-consuming but essential for obtaining ……..…….. results from data analysis. **[3]**

Students should complete the sentences by writing their chosen words in the spaces provided.

2 When a customer registers for the loyalty scheme, they enter personal data. The retailer must comply with UK General Data Protection Regulations (UK GDPR).

(a) Describe the purpose of UK GDPR

.....

.....

[1]

The number of points needed will always be written as a word in bold.

(b) State **two** principles of UK GDPR

1.....

2.....

[2]

Where a question asks for a specific number of points, we will always put numbers or response headings against the answer lines to show where students should write each point of their response.

There is one mark awarded for each correctly stated item of information.

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Key words will be in bold.

5

(c) Analyse the possible impacts on the retailer of **non-compliance** with UK GDPR.

.....

.....

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.....

.....

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.....

.....

[6]

This is an example of a level of response (LOR) question. This is worth six marks and needs an extended written response. This question assesses PO3 - Analyse and evaluate knowledge, understanding and performance and responses need to include an analysis. The question topic may be drawn from any relevant aspect of the unit's teaching content.

Extended response questions give students a real opportunity to show examiners the extent of their knowledge and understanding of the subject.

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Turn over

3 Customers use their membership number when they shop online or in store. Transactional data is captured by the retailer and saved against the customer record.

(a) Why does the retailer capture the transactional data of each customer?

.....

.....

[1]

(b) Explain **one** benefit to the **retailer** of using transactional data.

.....

.....

.....

.....

[2]

(c) Transactional data is structured data.

State **two other** examples of **structured data.**

1.....

2.....

[2]

Contexts and instructions for students are kept short to improve accessibility.

In this question, students need to apply their understanding (PO2) by explaining one benefit to the retailer of using transactional data.

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4 The transactional data is stored in a private cloud storage area.

(a) State **two** characteristics of a **private cloud**.

1.....

.....

2.....

.....

[2]

This **state** question assesses PO1 - show knowledge and understanding.

(b) Explain **one** limitation to the **retailer** of using a private cloud to store the transactional data.

.....

.....

.....

.....

[2]

This **explain** question assesses PO2 – apply knowledge and understanding and student responses must be applied to the scenario.

(c) State **one other** storage area the retailer could use to store the transactional data.

.....

[1]

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5 When customers use their membership number to shop online, the website shows product recommendations.

Explain how **Artificial Intelligence (AI)** can be used to provide the recommendations.

.....

.....

.....

.....

[2]

6 The retailer wants to add new products to their stock. Data analytics will be used to make informed decisions about the new products to be added.

(a) Describe the purpose of data analytics.

.....

.....

[1]

(b) Explain how data analytics software could help the retailer to make informed decisions about the new products.

.....

.....

.....

.....

[2]

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Appendix B in the specification contains a glossary of Command Words which will be used in our exams. The glossary tells you what we mean by each command word

The numer of lines given for a question indicate the approximate length of the answer needed.

Guidance is provided for this style of question to help students structure their answer effectively.

Where the number of answer lines spans two pages, the number of marks assigned to the question will be given at the end of the question rather than at the end of the answer lines.

9

Customer records, including the transactional records, are used as part of the process of making decisions about new products.

The retailer wants to use the data analytic technique of **cluster analysis** to make decisions about the new products.

(c) Discuss whether the retailer should use **cluster analysis** to make decisions about new products.

In your answer you **must** write about:

- Any benefits to the retailer
- Any limitations to the retailer
- Whether you would recommend that the retailer use cluster analysis to make decisions about new products **and** your reasons.

[9]

This is an example of a level of response (LOR) question. This is worth nine marks and needs an extended written response. This question assesses PO3 - Analyse and evaluate knowledge, understanding and performance and responses need to include discussion. The question topic may be drawn from any relevant aspect of the unit teaching content.

Extended response questions give students a real opportunity to show examiners the extent of their knowledge and understanding of the subject.

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Turn over

10

.....

.....

.....

.....

(d) State **two** data analytic techniques, **other than** cluster analysis.

1.....

2.....

[2]

The results of the data analytics will be presented at a meeting.

(e) Explain **one** benefit and **one** limitation to the **retailer** of using data visualisation software to present these findings.

Benefit.....

.....

.....

.....

Limitation .....

.....

.....

[4]

Where a question asks specifically for both a benefit and limitation, we will always put headings against the answer lines to show where students should write their answer.

There are a maximum of 2 marks awarded for each benefit and limitation explained.

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7 The new products have been introduced to the retailer's stock. The retailer is sending money-off vouchers to customers who have previously bought similar products.

Automated decision making will be used to select which customers will receive the vouchers.

(a) Explain how automated decision making could **increase** the risk of bias.

.....

.....

.....

.....

[2]

(b) A questionnaire will be sent to some customers asking for their views on the new products. Customers will be selected using the transactional records.

(i) State **two inclusive data principles** the retailer should consider when selecting customers to receive the questionnaire.

1.....

.....

2.....

.....

[2]

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12

(ii) Explain why **each** principle in **7(b)(i)** would need to be considered by the retailer.

1.....

.....

.....

.....

2.....

.....

.....

.....

[4]

Where a response relates to a response given in another question, the question number will be in bold.

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There are up to two marks available for a benefit and up to two marks for a limitation of using big data to increase energy efficiency.

One mark is awarded for identifying the benefit/ limitation, and one mark for saying how it will affect the retailer.

8 The retailer stores all their products in a warehouse. Staff pick, pack and despatch online orders from this warehouse.

The retailer wants the warehouse to be as energy efficient as possible.

Explain **one** benefit and **one** limitation to the **retailer** of using big data to increase the energy efficiency of the warehouse.

Benefit.....

.....

.....

.....

Limitation .....

.....

.....

.....

[4]

END OF QUESTION PAPER

This indicates to students there are no more questions to answer.

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